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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,086	03/05/2001	Aki Korhonen	19703000610	3265

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FLIESLER MEYER, LLP
FOUR EMBARCADERO CENTER
SUITE 400
SAN FRANCISCO, CA 94111

EXAMINER

LAO, SUE X

ART UNIT PAPER NUMBER

2194

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/800,086

Applicant(s)

KORHONEN, AKI

Examiner

Sue Lao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12 and 14-26 is/are rejected.
- 7) ☒ Claim(s) 9-11 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. Claims 1-26 are pending. This action is in response to the amendment filed 11/19/2004. Applicant has amended claims 1, 4, 17, 25 and 26.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to adequately teach the claimed limitation "perform diagnostics on the device independently of the device driver" as recited in claims 17-24.

In the application as filed, there does not appear to be any detailed descriptions or disclosure of performing diagnostics on the device independently of the device driver.

In the application as filed, applicant discloses, as an integral part of the device testing, issuing pass through commands to the device driver to test device 114 and in response, the device driver allows pass through. See application as filed, page 9, lines 11-14. In other words, the device testing process requires interaction with the device driver. Applicant fails to disclose "perform diagnostics on the device independently of the device driver" (emphasis added) in the specification as filed.

Claims 17-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant recites the limitation "perform diagnostics on the device independently of the device driver" in claim 17. There does not appear to be a written description of the

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claimed limitation in the application as filed, for the reasons set forth in the objection to the specification.

4. Claims 1-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365).

As to claim 1, Kathail teaches in a computer system having an operating system (operating system 30) and one or more devices (104, 105), a method for testing a device, the method comprising:

- determining a device driver for the device (FindDriversForDevice, col. 29, line 39 – col. 30, line 10);

- determining a class (family/class/group of driver, col. 8, lines 1-6) to which the device driver belongs (match family with devices, col. 19, lines 8-10);

- utilizing configuration information (family/class/group) in the device driver class to obtain general information about how the input/output device interacts with the computer system (device properties, fig. 4, device's IRQ, 70c) and information about how the input/output device can be accessed (driver name specific to a particular device, generic name applicable to a class/group of devices) (col. 7, line 9 – col. 8, line 18); and

- performing a diagnostic test (DeviceProbe, col. 41, lines 18-59) based on the information about how the input/output device can be accessed that is obtained from the driver class (determine if driver is right or wrong based on whether it is a generic name, col., 41, lines 38-46).

While Kathail teach testing based on how the input/output device interacts with the computer system (access type, col. 41, lines 28-36), Kathail does not explicitly teach that this information is included in the general information about how the input/output device interacts with the computer system / device property information (properties in fig. 4). This, however, would have been an obvious choice because similar device interaction properties, such as IRQs, are included in the device properties (col. 7, lines 9-43).

As to claim 2, Kathail teaches determining a device driver occurs while the operating system is active in that the system has been booted (col. 20, lines 4-10).

As to claim 3, Kathail teaches coordinating access to the device prior to the step of performing a diagnostic test in that finding/locating the driver inherently occurs before probing the found driver data structure (col. 41, lines 18-59).

As to claim 4, Kathail teaches a method for performing diagnostics (diagnostic operations) on a computer hardware device (104, 105) having a device driver (device driver) for interfacing with the computer hardware device. Kathail further teaches

publishing (device driver presents to operating system 30) capabilities (functionality, properties) of the device driver (driver description structure 80a, col. 10, line 56 – col. 11, line 42);

determining, from the capabilities (properties, fig. 4) of the device drivers, general information about how the input/output device interacts with the computer system (device properties, fig. 4) and information about how the input/output device can be accessed (driver name specific to a particular device, generic name applicable to a class/group of devices) (col. 7, line 9 – col. 8, line 18); and

performing a diagnostic test on the hardware device (DeviceProbe, col. 41, lines 18-59) based on the information about how the input/output device can be accessed that is obtained from the driver class (determine if driver is right or wrong based on whether it is a generic name, col., 41, lines 38-46).

While Kathail teach testing based on how the input/output device interacts with the computer system (access type, col. 41, lines 28-36), Kathail does not explicitly teach that this information is included in the general information about how the input/output device interacts with the computer system / device property information (properties in fig. 4). This, however, would have been an obvious choice because similar device interaction properties, such as IRQs, are included in the device properties (col. 7, lines 9-43).

While Kathail does not explicitly teach receiving the capabilities of the device driver, it would have been an obvious step because the operating system including its device manager maintains (Registry 10) such device driver information use it to manage

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(such as match and probe) devices and drivers. Col. 10, line 56 – col. 11, line 42; col. 41, lines 18-59; col. 42, lines 20-64.

As to claim 5, Kathail teaches identifying capabilities of the device driver (driver description) by a diagnostic module (device manager) (col. 10, lines 14-28).

As to claim 6, note discussion of claim 3.

As to claims 7, 8, Kathail teaches testing the computer hardware device using the diagnostic module (DeviceProbe, col. 41, lines 18-59), determining the device driver is for interfacing with the computer hardware device (no error).

5. Claims 12, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365) as applied to claim 4 in view of Capelli (U S Pat. 6,240,468).

As to claim 12, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include that the device driver is capable of being passed through to access the computer hardware device.

Capelli teaches switching a device driver between a standard and a non-standard modes of communication, wherein the device driver (module 202, which itself is a device driver, col. 4, lines 6-9) is capable of being passed through (set to inactive state, col. 3, lines 20-54). Therefore, it would have been obvious to include into the capabilities of Kathail that the device driver is capable of being passed through in order to access the hardware device. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Capelli because this would have provided a transparent mechanism to support multiple operation modes without replacing/reinstalling the device drivers (Capelli, col. 1, lines 45-63; col. 5, lines 5-19).

As to claim 25, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include accessing the computer hardware device in parallel with a diagnostic module.

Capelli teaches a standard driver accesses a device in parallel with a specialized driver (perform initialization/termination functions by both drivers, col. 3, lines 46-67).

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Therefore, it would have been obvious to allow the device driver (standard driver) accessing a device in parallel with a diagnostic module (specialized driver) in Kathail, and to include the parallel access into the capabilities broadcast. Note discussion of claim 12 for a motivation to combine.

6. Claims 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al as applied to claim 1 in view of Fukuoka et al (U S Pat. 4,802,164).

As to claims 15, 16, teaches allocating an area of a device for testing (turn on the lock), performing a diagnostic test directly on the area allocated (test I/O), and releasing the area allocated when the test is concluded (turn off the lock). See col. 2, line 47 - col. 3, line 15; col. 5, line 55 – col. 6, line 18. Therefore, it would have been obvious to allocate an area, to perform a diagnostic test and to releasing the area in Kathail. One of ordinary skill in the art would have been motivated to apply the teaching of Fukuoka because this would have provided enhanced start control of the devices (col.,1, lines 33-36, 53-68) in the multiple operation environment (normal operation, testing) of Kathail.

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al (U S Pat. 5,802,365) in view of Perugini et al (U S Pat. 5,896,494).

As to claim 26, Kathail teaches a system for testing one or more devices (104, 105) attachable to a computer system, comprising:

a device access kernel (system software 30 including device manager 95), wherein said device access kernel is capable of identifying a device driver associated with a device (FindDriversForDevice, col. 29, line 39 – col. 30, line 10) and determining information about how the input/output device is accessed (driver name specific to a particular device, generic name applicable to a class/group of devices) (col. 7, line 9 – col. 8, line 18);

testing the device (DeviceProbe, col. 41, lines 18-59) based on the information about how the input/output device can be accessed that is obtained from the driver

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class (determine if driver is right or wrong based on whether it is a generic name, col., 41, lines 38-46).

While Kathail teaches testing devices of different classes, Kathail does not explicitly teach a plurality of diagnostic tests designed to respectively test said one or more devices, wherein said device access kernel selects one of said plurality of diagnostic tests for testing said device.

Perugini teaches testing devices of different classes (different types of hardware components), including a plurality of diagnostic tests (diagnostic library 202, modules 234-268) designed to respectively test said one or more devices, wherein a device access kernel selects (configuration utility, fig. 2C) one of the plurality of diagnostic tests for testing a device (test profiler allows selection of modules, each targeting a specific types of hardware, col. 9, lines 32-35).

Therefore, it would have been obvious to include a plurality of diagnostic tests designed to respectively test said one or more devices into Kathail, and that the device access kernel selects one of the plurality of diagnostic tests for testing that device based on said determined class. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Perugini because this would have provided an intuitive graphical test development environment which simplifies test definition process (col. 2, lines 3-39).

8. Claims 17-19, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of IBM (TDB, "Diagnostic Kernel Extension").

As to claim 17, note discussion of claim 1 for operating system, at least one hardware device, device driver, class. Kathail further teaches kernel module (device manager 95) for communicating with the device driver and the operating system to obtain information about how the device is accessed (device manager, col. 9, lines 21-61), diagnostic module (device manager 95) for coordinating with the kernel module and/or the device driver in order to perform diagnostics on the hardware device. See col. 9, line 21 – col. 10, line 27. it is noted that the alternative limitation 'and/or' is interpreted as requiring only one. Kathail further teaches utilizing the information about

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how the input/output device is accessed to perform diagnostics (DeviceProbe, col. 41, lines 18-59) on the device (determine if driver is right or wrong based on whether it is a generic name, col., 41, lines 38-46). Regarding independently of the device driver, note section 3 above.

Kathail does not teach that the driver and the modules are packaged into a diagnostic hardware access layer interface for performing diagnostics.

IBM teaches packaging diagnostics software into a diagnostic hardware access layer interface (diagnostic kernel extension). See entire text. Therefore, it would have been obvious to package the driver and the modules of Kathail into a diagnostic hardware access layer interface. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and IBM because this would have reduced driver cycle time and path length (IBM, page 2).

As to claim 18, Kathail teaches device driver is capable of publishing the class to which it belongs (export driver description to registry 10, col. 10, lines 14-27).

As to claim 19, Kathail teaches the kernel module identifies the class of the device driver (Registry 10).

As to claim 21, Kathail teaches the kernel module is capable of determining whether diagnostics are performable on the hardware device (DeviceProbe, col. 41, lines 18-59).

As to claim 22, Kathail teaches the class of the device driver is dependent on the hardware device (family, col. 19, lines 8-10).

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of Edwards et al (U S Pat. 6,44,735) and IBM (TDB, "Diagnostic Kernel Extension").

As to claim 14, Kathail teaches broadcasting capabilities (driver description exported to registry 10, col. 10, lines 14-27), but does not teach that the capabilities include that only diagnostics embedded in the device driver may perform diagnostics on the computer hardware device. Edwards teaches only diagnostics embedded in the device driver may perform diagnostics on the computer hardware device (internal

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diagnostic processes, col. 8, lines 36-48). Therefore, it would have been obvious to allow only diagnostics embedded in the device driver to perform diagnostics on the computer hardware device in Kathail. One of ordinary skill in the art would have been motivated to combine the teachings of Kathail and Edwards because IBM teaches that placing test code in the driver and in the kernel extensions are obvious alternatives to each other (IBM, pages1-2) .

10. Claims 20, 23, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathail et al in view of IBM as applied to claim 17 and further in view of Capelli.

As to claim 20, note discussion of claim 25.

As to claims 23, 24, Capelli teaches a driver/device is identified by its mode (standard mode, specialized mode). Therefore, it would have been obvious to classify/identify a driver depending on its mode in Kathail. When the teachings of Kathail and Capelli are combined, it would have been obvious to classify/identify a driver by both the mode of the device/driver and the hardware device because they each describe an important aspect of the device/driver operations.

11. Claims 9, 10, 11, 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Applicant's arguments filed 11/19/2004 have been fully considered but they are not persuasive.

As to amended feature of obtaining information about how the input/output device interacts with the computer system and how the input/output device can be accessed, it is met by Kathail who teaches utilizing configuration information (family/class/group) in the device driver class to obtain general information about how the input/output device interacts with the computer system (device properties, fig. 4, device's IRQ, 70c) and information about how the input/output device can be accessed (driver name specific to a particular device, generic name applicable to a class/group of

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devices) (col. 7, line 9 – col. 8, line 18). Kathail teaches performing a diagnostic test (DeviceProbe, col. 41, lines 18-59) based on the information about how the input/output device can be accessed that is obtained from the driver class (determine if driver is right or wrong based on whether it is a generic name, col., 41, lines 38-46), and testing based on how the input/output device interacts with the computer system (access type, col. 41, lines 28-36). Kathail does not explicitly teach that this information is included in the general information about how the input/output device interacts with the computer system / device property information (properties in fig. 4). This, however, would be an obvious choice because similar device interaction properties, such as IRQs, are included in the device properties (col. 7, lines 9-43).

As to the amended performing diagnostics on the device independently of the device driver, note section 3 of this action. In the application as filed, applicant discloses, as an integral part of the device testing, issuing pass through commands to the device driver to test device 114 and in response, the device driver allows pass through. See application as filed, page 9, lines 11-14. In other words, the device testing process requires interaction with the device driver.

Applicant argued that “[t]he system of Kathail can only interact with a hardware device in a manner that is permitted by the drivers. It cannot go beyond the limitations of existing drivers or interact with the device when the drivers are not operative.” (remarks, page 9). The examiner’s response is that the argued going beyond the limitations of existing drivers and interacting with the device when the drivers are not operative are not claimed. See independent claims 1, 4, 17, 26.

13. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire **THREE MONTHS** from the date of this action. In the event a first response is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

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any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (571) 272-3764. A voice mail service is also available at this number. The examiner's supervisor, SPE Meng-Ai An, can be reached on (571) 272 3756. The examiner can normally be reached on Monday - Friday, from 9AM to 5PM. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 9, 2005


SUE LAO
PRIMARY EXAMINER